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ABSTRACT

The Mathematics Assessment Process (MAP) for the Middle Grades gives teachers and school reform leaders new tools to examine and systematically realign mathematics programs. MAP engages an interdisciplinary coalition within a school in an exploration of mathematics instructional excellence. Through an extensive self-study, a school answers the question, "How well is our mathematics program meeting the needs of the students in our school?" MAP integrates three central ideas: consensus on the need for major revisions in middle-grades mathematics, need to implement effective mathematics instructional practices targeted for adolescents, and existence of practical, tested strategies for planning change that can guide the restructuring of middle-grades mathematics programs. At the core of MAP is a set of "Criteria for Excellence" developed by a national advisory panel of middle-grades practitioners summarizing the principles underlying outstanding middle-grades mathematics education. This document, "MAP Instruments," the second in a three volume set, contains 10 assessment instruments that are the core of the data-gathering process in four sections. Introductory sections provide a MAP instrument summary and a listing of MAP "Criteria for Excellence" and accompanying ideals. Sections 1, 2, and 3 provide the instruments for interviews, observations, and surveys and statistical profiles. Section 4 has two data analysis guides, a criteria and ideals cross-reference list and a criteria and ideals cross-reference worksheet. (MDH)

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Acknowledgments

This program planning and change model has benefited from the creative contributions of a distinguished partnership of professionals. Their work reflects the changing nature of mathematics learning and the needs of young adolescents in the last decade of the twentieth century. Teachers, principals, and central office administrators from the school districts that field tested earlier versions of the model actively participated in its development and refinement, establishing practical and workable process.

The field-test version of MAP was designed at the Center for Early Adolescence at the University of North Carolina at Chapel Hill. It built upon the Center's extensive experience with programs dedicated to enriching educational opportunities and community support for young adolescents. Two Center publications were particularly influential, Joan Lipsitz's *Successful Schools for Young Adolescents* and Gayle Dorman's *Middle-Grades Assessment Process (MGAP)*.

Many individuals were especially resourceful contributors to the early phases of this work. Rebecca B. Corwin of Lesley College and the Technical Educational Research Center (TERC), the co-author of Section II, drafted the first set of assessment questions, and helped modify early versions of the Criteria and Ideals. Her insights into and appreciation of teachers' power as leaders, assessors, and curriculum strategists molded the first edition of this assessment. As we modified the MAP framework to make it practical for middle schools, Daria Courtney, Evette Horton, and Carol Capper thoughtfully edited and re-edited versions of the text and the instruments, striving to make them personal, professionally provocative, and in the end, educationally beneficial for students. They also recommended the resources provided in this pilot edition of MAP, seeking those that would be most useful to practitioners.

Two committed advisory panels—whose members are listed in the Appendices—established a high standard for what MAP could accomplish. Their advice and ideas throughout each development phase strengthened the product. At North Carolina State University, the staff of the Center for Research in Mathematics and Science Education lent able assistance as we piloted MAP and completed this revised edition. We thank especially Sally Berenson, Delores Evangelista, and Lyn Billington for their expertise, patience, and "can do" attitude. Colleagues Jim Wilson and Tom Cooney at the University of Georgia served as a sounding board for this project, posing probing questions and offering thoughtful advice as we developed and tried out the assessment materials.

And finally, but significantly, we were extremely fortunate to have the support of Barbara Scott Nelson and Barbara Hatton at The Ford Foundation, and Pat Willis at the BellSouth Foundation. These program officers unfailingly encouraged us to be inventive and original. Their sustained interest and enthusiasm for our ideas fueled our optimism about the potential of teacher-led educational improvement, thus enabling us to build a model that is fully teacher-led and student-centered.

Preface

The Mathematics Assessment Process for the Middle Grades (MAP) is a program evaluation guide designed to assess needs and to direct improvements in middle-grades mathematics programs. It is structured on the basis of the National Council of Teachers of Mathematics' *Curriculum and Evaluation Standards for School Mathematics* and recent national reports that call for middle-grades mathematics to be more problem-centered, experience-based, and connected to modern technological society. MAP engages an interdisciplinary team of educational stakeholders—teachers, administrators, parents, and students—in a participatory process that defines the future direction of schools' mathematics programs.

MAP has a dual emphasis. First, it recognizes that effective mathematics teaching occurs within a partnership. It is most successful when mathematics teachers have the sustained collaboration of school- and district-level administrators, colleagues across disciplines, and community members and parents. Second, MAP is a framework for improvement. Recognizing the critical importance of the middle-school years, MAP establishes that effective teaching is developmentally appropriate and proposes how to design an educational program that responds to the normal changes and uncertainties of 10- to 15-year-old learners.

MAP includes three volumes of materials that, together, provide a school or school district with a self-contained set of tools for conducting its own mathematics program assessment. The contents of each volume are described below.

Volume 1: User's Manual

The *User's Manual* includes guidelines and resources for completing an assessment and directions on how to develop a long-range plan for modernizing and improving a mathematics program. It is designed with a schoolwide focus, so it can be used by an interdisciplinary team or a mathematics department within a school. It also can be easily adapted for use by a group of schools within a district, state, or region.

Section 1 — Section 1 discusses the need for MAP by describing the trends in middle-grades mathematics; and introduces the MAP "Criteria for Excellence"—the content that frames the program.

Section 2 — Section 2 explores the philosophic core of MAP through a discussion of the Criteria for Excellence. Arguing that mathematics is fundamentally a communication and problem-solving process, this section suggests examples of how the Criteria apply in middle-grades classrooms and in the community.

Sections 3 and 4 — Sections 3 and 4 take team members—step-by-step—through the approach to conducting MAP: collecting, analyzing and summarizing the data; and

writing recommendations and an action plan for implementing changes. By following the process described in these sections, schools will complete MAP and use their findings to redesign their mathematics program so that it is consistent with the MAP Criteria for Excellence and with the recommendations of the NCTM *Curriculum and Evaluation Standards for School Mathematics*.

Section 5

Section 5 provides a staff development exercise that is designed to help schools establish a shared understanding of how mathematics programs can be more responsive to the unique needs of 10- to 15-year-olds. "Puzzling and Problem Solving: Creating Responsive Mathematics Programs for Young Adolescents" is to be completed by the faculty, mathematics department staff, parents, and administrators within a school as they begin the assessment process.

Section 6

A series of annotated resource lists completes the MAP *User's Manual* and serves as a reference for teachers, school personnel, and parents. Selected for their practicality and accessibility, these suggested references provide the research basis of the concepts within MAP. Teams may turn to the resources in these lists as they conduct their assessments and when they search for ideas about drafting a plan of action for improving their mathematics programs.

Appendices

The Appendices include guidelines for making logistical decisions throughout the assessment process and a glossary of mathematics terms used in assessment.

Volume II: MAP Instruments

Ten assessment instruments—interviews, observations, and surveys—are the core of the data-gathering process. The instruments are included in Volume II, along with descriptive material that will help teams organize and use them.

Volume III: Staff Development Guidelines

A series of seven staff development workshops enables a school's team leaders to direct its own site-based preparation for using MAP. In addition to detailed instructions on how to conduct each workshop, a comprehensive appendix offers practical suggestions to team leaders about leading workshops for professional colleagues and other adult learners. It also outlines hints for coordinating the logistics of the assessment process.

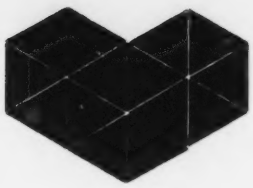
Mathematics Assessment Process for the Middle Grades (MAP): Project History

Initially conceived in 1987, by the Center for Early Adolescence at the University of North Carolina at Chapel Hill, MAP emerges from a concept that was designed and first field-tested in 14 middle-grades schools. The earlier version was planned as a supplement to the Center's *Middle Grades Assessment Program* (MGAP) (Dorman, 1984).

Beginning in September 1989, MAP was reconceptualized and modified to meet the developing standards of the national reform movement. Mathematics educators from North Carolina State University and the University of Georgia were selected to lead the piloting and revision of MAP. Following a year-long trial, researchers modified the program to bring it in line with new expectations for mathematics improvement and tested it in nine schools within seven school districts nationally.

Throughout the development process, mathematics teachers, supervisors, and school administrators played strong roles in molding the program. The pilots occurred in very different school contexts and communities, assuring the relevance and practicality of MAP to life in schools. In its four years of development, several hundred school- and district-level educators, parents, students, and university researchers contributed to the design and to the trials of the assessment instruments and the implementation process. Too numerous to name each one, these committed school-site practitioners willingly and continually advised and critiqued this process, helping the authors keep it "grounded" and practical for today's schools. The names of advisory board members and lead personnel associated with the project during its development are included in Appendix 4 of Volume I.

MAP evolves from a strong collaboration of middle-grades practitioners and researchers. As a result, its design reflects the commitment to mathematics education renewal that exists within middle-grades schools. Given time for reflection and analysis, along with committed internal and external administrative support for examining programs and planning improvements, teachers are innovative and energetic leaders of change. In the hands of site-based educators, MAP is a powerful tool for strengthening educators' capacity to change and to advance mathematics programs and teaching practices.



Volume II:

MAP ASSESSMENT INSTRUMENTS

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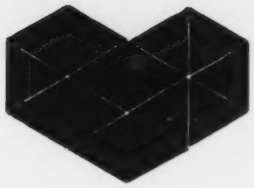


MAP INSTRUMENTS

Summary

The assessment instruments are a central ingredient in the MAP program, the tools that enable the assessment work to be done. By using these instruments, data are gathered through interviews, observations, and surveys of faculty, staff, administrators, parents, and students. Training for those using the instruments is offered early in the program, ensuring reasonable consistency and increasing validity of assessment results. All data and other information obtained in the assessment process is held in confidence, and is maintained with complete anonymity for those responding to or observed in the program. The MAP instruments include:

Mathematics Teacher Interview. Interviews, conducted by members of the Mathematics Teacher Cluster, are far-ranging—seeking expressions of teaching philosophy pertinent to middle-grades students as well as specific information on course content.

Administrator Interview. A member of the Interdepartmental Faculty Cluster solicits information about awareness of and support for mathematics instructional practices.

Faculty Interview. Members of the instructional staff and other school-site faculty who do not teach mathematics focus on interdisciplinary awareness of and support for infusion of mathematics principles throughout the middle -grades curriculum

Parent Interview. A sampling of approximately 10 percent of parents is questioned about involvement in and support for the school's mathematics program and expectations for their children's competence and understanding in mathematics.

Student Interview. A sampling of approximately 10 percent of students has an opportunity to express their opinions about the relevance of their mathematics instructional programs to their present lives and to their academic career objectives.

Mathematics Classroom Observation. A member of the Mathematics Teacher Cluster looks at teaching processes, environments, and procedures. Observation of teaching among colleagues is a rewarding method of exchanging ideas and broadening teaching perspectives. To promote such an exchange, MAP observers and their observed colleagues are encouraged to discuss the observation process with one another at a convenient time soon after it takes place.

Schoolwide Observation. The Interdepartmental Faculty Cluster is responsible for conducting schoolwide observations of all classes and student and faculty work areas to determine the extent to which mathematics teaching and learning are promoted schoolwide

Each cluster member observes a designated portion of instructional classes and, in addition, observes informally in other student and staff work areas. Other faculty members may join the observation process after receiving training in the procedures from a team member.

Mathematics Teacher Survey. All mathematics teachers are asked to complete the Mathematics Teacher Survey, a supplementary instrument that documents information about their training, instructional approaches, the materials and resources they use, evaluation procedures, and special mathematics activities and programs.

Materials and Facilities Survey. Mathematics teachers also extensively review the materials and facilities available for teaching mathematics, ranging from teachers' resources (such as a photocopy machine or computers), to student resources (such as calculators and computers), to resources in the media center/library (such as filmstrips and VCRs). Also sought is a detailed list of mathematics reference materials, displays, and manipulatives that are available to teachers, and information about how frequently they are used.

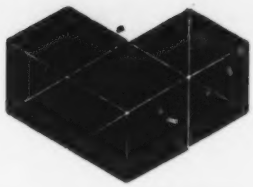
Statistical Profile. The final instrument used in the MAP program, the Statistical Profile, summarizes schoolwide achievement data and demographic background information about the school population. It is used by the MAP team as part of the overall data-gathering process to obtain a statistical portrait of students in the school

MAP INSTRUMENTS

Overview

Abbreviation	Instrument	Conducted By*	To Learn About
MTI	Mathematics Teacher Interview	MT	Mathematics Teachers
ADM	Administrator Interview	IF	Administrators
FI	Faculty Interview	IF	Other School-Site Faculty and Professional Support Staff (e.g., Counselors, Librarians, etc.)
PARI	Parent Interview	ASC	Parents, Community Members
STI	Student Interview	ASC	Students
MCO	Mathematics Classroom Observation and Observation Feedback Form	MT	Mathematics Classes
SWO	Schoolwide Observation of Mathematics-Related Activities and Observation Feedback Form	IF	All Other Classes
MTS	Mathematics Teacher Survey	MT	Mathematics Teachers
MFS	Mathematics Materials and Facilities Survey	Team	Mathematics Facilities
SP	Statistical Profile	Team	School, Students, and Mathematics Program

***Abbreviations refer to the Team Clusters responsible for collecting and analyzing the assessment data for that instrument. MT = Mathematics Teachers. IF = Interdepartmental Faculty. ASC = Administration, Support Staff, Community.**



MAP CRITERIA FOR EXCELLENCE AND ACCOMPANYING IDEALS

An effective middle-grades mathematics program:

A. Content

Uses a problem-centered curriculum to develop students' conceptual understanding of mathematics, appreciation for its applications, and proficiency in computational skills.

1. The curriculum provides a problem-based context for learning.
2. Mathematics problems occur in varied formats.
3. The curriculum content is balanced and comprehensive.
4. The curriculum develops number and operation sense.
5. The curriculum develops spatial and measurement sense.
6. The curriculum includes probability and statistics.
7. The curriculum introduces algebraic notions of variables, equations, and functions.
8. The curriculum emphasizes understanding of concepts and procedures.
9. The curriculum is research-based and responds to a changing society.

B. Instruction

Engages students in a variety of learning experiences designed to promote mathematical exploration and reasoning.

1. Students actively engage in mathematics.
2. Students discover meaning through manipulations with concrete materials.
3. Students learn individually and in groups.
4. Students construct meaning using a variety of resources and instructional materials.
5. Instruction makes appropriate and regular use of technology.
6. Instruction balances new learning and review; classwork and homework.
7. Supplementary programs and enrichment activities extend mathematics instruction beyond the classroom.
8. Homework extends mathematics learning and applies new study skills.

C. Thinking Processes

Develops students as problem solvers, critical thinkers, and effective communicators in mathematics.

1. Thinking processes reflect multiple strategies for problem solving.
2. Teachers model problem solving.
3. Students pose problems and discover solutions.
4. The curriculum develops analytical reasoning abilities.
5. Students and teachers discuss mathematical ideas.
6. Students write and talk with one another about mathematics.
7. Teachers clarify underlying concepts and listen to students' ideas.

D. Developmental Diversity

Provides instruction and resources to meet young adolescents' diverse learning needs.

1. All students, especially minorities, girls, and developing English speakers, have equal access to information, assistance, and classroom interaction.
2. Teachers use fair and flexible grouping practices.
3. Teachers accommodate special needs, abilities, and disabilities.
4. Teaching strategies motivate underachievers.
5. The classroom environment invites participation by all students.
6. Staff development and planning focus on the unique developmental needs of young adolescents.

E. Attitudes

Fosters positive attitudes about mathematics and encourages and recognizes students' accomplishments.

1. Teachers believe all students are competent in mathematics.
2. Students believe they can be successful in mathematics.
3. Students help develop high expectations and standards for themselves and others.
4. The school recognizes and rewards the mathematics achievements of all students.
5. Originality and accuracy in mathematics are both rewarded.
6. Students are free to make mistakes and are encouraged to take risks.
7. The school encourages families to expect and support mathematics achievement.
8. School support personnel (counseling staff, media specialists, etc.) assist in promoting the mathematics program.
9. The community values mathematics achievement.

F. Relevance

Relates mathematical knowledge to students' interests, experiences, and future goals.

1. Teachers relate mathematics to individual interests.
2. Imaginative uses of mathematics are stimulated.
3. Mathematics is applied to the arts and sciences.
4. The usefulness of mathematics is taught across subjects.
5. The program stresses the importance of mathematics in everyday life and in future career choices.

G. Collegiality

Inspires collegiality among faculty who work together to implement responsive programs for young adolescents.

1. The mathematics program has strong leadership and an effective, knowledgeable, and caring staff.
2. The school and district support teachers' continuing education in mathematics.
3. The mathematics department conducts regular program reviews and plans in-service activities.
4. Interdisciplinary collaboration strengthens mathematics teaching.
5. Administrators encourage professional involvement.
6. Schedules enable collaborative planning.

H. Community

Involves parents and the community in a collaborative effort to promote student competency in developing and using mathematical knowledge.

1. Parents and community are involved in improving the mathematics program.
2. Parents are informed about the development and purposes of the mathematics program.
3. Parents are informed of specialized support and instructional assistance in mathematics.
4. Parents are informed of mathematics curriculum options and their consequences.
5. Parents and community participate in mathematics activities in and outside of school.

I. Continuing Assessment

Continually assesses student achievement, evaluates program effectiveness, and uses the results to determine the need for improvement.

1. Individual student achievement is evaluated using multiple sources of data.
2. Students and parents receive constructive feedback.
3. Assessment sources address school, district, state, and national goals.
4. Grading policies are clearly defined and administered consistently.
5. The mathematics program is evaluated using multiple sources of data.
6. Teachers in all subject areas participate fully in program planning and evaluation.
7. The middle-grades mathematics program coordinates with the mathematics programs in local elementary and high schools.
8. The mathematics department monitors curriculum materials for bias.

Section 1:
INTERVIEWS

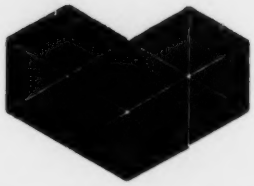
Mathematics Teacher Interview (MTI)

Administrator Interview (ADM)

Faculty Interview (FI)

Parent Interview (PARI)

Student Interview (STI)



MATHEMATICS TEACHER INTERVIEW

Thank you for your willingness to contribute to the assessment of our school's mathematics program. We will be asking questions that will provide our assessment team with information about how we fulfill the criteria for successful middle-grades mathematics programs nationwide. Your responses to these questions and your candid views will help plan our program improvements. As we talk, I will be taking notes on what you are saying, but, please be assured, your responses will remain absolutely confidential and anonymous.

(NOTE TO INTERVIEWER: This can be a two- or three-part interview. You may stop at any convenient point and continue at another scheduled time.)

IDEALS	QUESTIONS	NOTES

[A-4] **1.** Let's begin by discussing some topics and skills that sometimes are included in middle-grades mathematics. I'd like to start in the area of "number and operation sense." Please tell me which of these topics will or will not be taught in your class this year. For those that will not be taught, please explain why.

	Will Be Taught	Will Not Be Taught	Uncertain
Equivalent forms for numbers (integers, fractions, decimals, etc.)	_____	_____	_____
Ratios, proportions, percents	_____	_____	_____
Graphing on the number line and in the plane	_____	_____	_____
Order relations for whole numbers, fractions, decimals, and integers	_____	_____	_____
Operations on whole numbers, fractions, decimals, and integers	_____	_____	_____
Number theory (primes, factors, multiples, etc.)	_____	_____	_____
Alternative algorithms for computation	_____	_____	_____
Estimation techniques and applications	_____	_____	_____
Mental computation	_____	_____	_____

[A-5] **2.** Now, I will read a list of topics relating to "spatial and measurement sense." Please tell me which of these topics will be taught and which will not be taught in your classes this year. For those that will not be taught, please explain why.

	Will Be Taught	Will Not Be Taught	Uncertain
Describing and comparing geometric figures	_____	_____	_____
Visualizing and drawing geometric figures	_____	_____	_____
Transformations: reflections, rotations, translations	_____	_____	_____
Geometric properties and relationships	_____	_____	_____
Estimating, making, and using measurements	_____	_____	_____
Selecting appropriate units and tools	_____	_____	_____
Perimeter, area, and volume	_____	_____	_____
Angle measure	_____	_____	_____
Scale and scale conversions	_____	_____	_____
Tessellations	_____	_____	_____

IDEALS	QUESTIONS	NOTES

[A-6] **3.** Here is a list of topics related to probability and statistics. Please respond as before.

	Will Be Taught	Will Not Be Taught	Uncertain
Determining probabilities experimentally	_____	_____	_____
Constructing sample spaces	_____	_____	_____
Expectations and predictions	_____	_____	_____
Collecting, organizing, and describing data	_____	_____	_____
Reading and interpreting tables, charts, and graphs	_____	_____	_____
Making inferences based on data analysis	_____	_____	_____

[A-7] **4.** Finally, here is a list of topics related to algebra. Please respond as before.

	Will Be Taught	Will Not Be Taught	Uncertain
Concepts of variable, expression, and equation	_____	_____	_____
Representing number patterns with tables, graphs, and equations	_____	_____	_____
Analyzing tables and graphs	_____	_____	_____
Solving linear equations using concrete, informal, and formal methods	_____	_____	_____
Inequalities and non-linear equations	_____	_____	_____

[A-8] **5.** There is a continuing debate in mathematics education over which comes first—understanding or skills. What do you think?

[A-1] **6.** Which do you think is more important—skills or applied problem-solving, and why?

[B-2] **7.** In what ways do your students use mathematics tools, models, and manipulative materials to develop their grasp of mathematical meaning?

[A-2] **8.** What kinds of problem-solving activities do you do in class, besides what is in the textbook?

[C-1] **9.** How do you assure that students learn to use a *variety of strategies* for solving problems?

IDEALS	QUESTIONS	NOTES
[C-2]	**10.** What do you do when you find you cannot work a problem that you had assigned your students?	
[C-4]	**11.** How do you integrate the teaching of reasoning into your mathematics instruction?	
[D-4]	**12.** What techniques do you use to encourage thinking and problem-solving among students who have difficulty learning mathematics?	
[D-3]	**13.** What techniques do you use to challenge students who are good in math?	
	What kinds of accommodations do you make for special education students in your math program?	
[F-1]	**14.** What are some of the ways you relate mathematics to students' individual interests?	
[F-3]	**15.** Does your text include applications of mathematical ideas to other subject areas? To which subjects?	
[C-6]	**16.** In what ways do you encourage students to speak and to write about mathematics? For instance, do students describe their mathematical procedures to one another or write about their mathematics learning in journals?	

IDEALS	QUESTIONS	NOTES
[C-3]	**17.** How do you help students develop their ability to pose problems and to discover solutions for themselves?	
[E-5]	**18.** How do you help students understand that inventive and thoughtful use of mathematical strategies is as important as accuracy in skill development? For example, do you ever give partial credit for correct methods that do not yield correct answers?	
[E-6]	**19.** How do you encourage risk taking in mathematics learning and show your students that they can learn from their mistakes?	
[I-8]	**20.** What mechanisms are in place in this school for screening mathematics textbooks, tests, and other classroom materials to avoid gender, racial, or ethnic bias?	
[H-5]	**21.** How do you demonstrate the connections between mathematics and the world we live in? For example, do you use resource speakers, outside consultants, experts from neighboring businesses, films, video tapes? Anything else?	
[F-5]	**22.** There is great concern about the underrepresentation of girls and minority students in mathematics-related fields. How do you ensure that girls and minority students are encouraged to excel in mathematics? What efforts do you make to expose these students to role models in mathematics-related fields?	

IDEALS	QUESTIONS	NOTES
[B-5]	**23.** In what ways do you encourage your students to use calculators? May they use them on in-class assignments or homework? What about on tests?	
	Are you currently using computers in your mathematics classes? If so, what are their strengths and weaknesses? If not, how would you like to be using computers with your mathematics classes?	
[B-5]	**24.** What kinds of staff development have you had to learn how to use calculators with middle-grades math students?	
	What kinds of staff development have you had to learn to use computers with middle-grades mathematics students?	
[I-7]	**25.** How well do you think our school's mathematics program is coordinated with the local elementary and high school programs?	
[B-1]	**26.** In your classroom, how do you engage your students both intellectually and physically in the process of learning mathematics?	
[E-3]	**27.** What options do students have to plan and structure their own classroom work time and their homework and project responsibilities?	
	How do they participate in establishing routine classroom rules and procedures?	

IDEALS	QUESTIONS	NOTES
[B-3]	**28.** How do you organize your classes so that students have the opportunity to work in groups as well as independently?	
[B-7]	**29.** What opportunities do your students have for participating in math-related activities outside the regular classroom?	
[D-1]	**30.** Do the participants in these math activities represent all racial, ethnic, and gender groups in the student population? If not, what is done to try to involve these groups that often are underrepresented in mathematics?	
[E-1]	**31.** Some people believe that mathematics is a subject that not everyone can master; others disagree. What do you think about this issue?	
	What do you ordinarily do when you realize that a student believes he or she can not succeed in mathematics?	
[D-2]	**32.** What criteria are used to determine student placements in math courses?	
	How does the department staff assure that such placements are flexible?	
[C-5]	**33.** What percentage of class time would you say you typically devote to having students talk with you about their mathematics procedures or ideas (as opposed to simply supplying steps or answers)?	

IDEALS	QUESTIONS	NOTES
[E-4]	**34.** How does the school recognize and encourage students' achievements in mathematics?	
	How are students who are least proficient in mathematics rewarded for their achievements?	
[I-1]	**35.** Please describe what you use in addition to teacher-made or standardized test scores to evaluate your students' math progress?	
	Do you ever use students' writing about mathematics, their project work or their own self-evaluations as part of their mathematics grade? Please explain.	
[I-4]	**36.** How do you assure that your grading policy is consistent and fair to all students?	
[B-8]	**37.** Describe your homework policy. Please indicate how much, how often, and what type of homework you assign.	
	What, in your view, is a good balance between new material and review in the middle-school math program?	

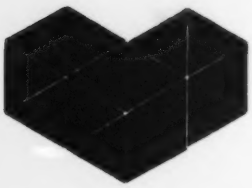
IDEALS	QUESTIONS	NOTES
[A-3]	**38.** What strategies do you use to assure the mathematics curriculum balances concept building, problem solving, and procedural skill development (e.g., basic operations and rote skills, etc.) so students become more successful mathematics achievers?	
[E-7]	**39.** How do you encourage parents to help their children excell in mathematics?	
[I-2]	**40.** How do you communicate to parents and to students about students' progress and achievements in classwork, homework, and on both in-class and standardized assessments?	
[I-5]	**41.** How do you know if your mathematics instruction is working for your students?	
[G-4]	**42.** How often do you work with colleagues in mathematics and other subject areas to plan, teach, or extend your skills as a mathematics teacher?	
[G-6]	**43.** What opportunities are there for members of the mathematics department to plan together, observe one another, and exchange feedback during the school day?	
[F-4]	**44.** What is done in this school to integrate the use of mathematics into other subject areas?	

IDEALS	QUESTIONS	NOTES
[G-3]	**45.** How are the mathematics teachers in this school involved in setting and reviewing the school's mathematics program goals and objectives?	
[I-6]	**46.** What kinds of suggestions about the mathematics program are obtained from teachers in other subject areas?	
[G-1]	**47.** What, if any, specialized training and experiences do you have to prepare you to teach mathematics in the middle grades?	
[D-6]	**48.** Describe the in-service or staff development programs that have been available to develop teachers' skills as middle-grades mathematics teachers.	
[G-3]	**49.** What role does the mathematics faculty have in planning and implementing its own in-service and staff development?	
[G-5]	**50.** How do this school's administration and the district's leadership support or encourage your participation in local, state, or national mathematics associations or meetings?	
[G-2]	**51.** How do they support or encourage other forms of professional development (e.g., courses, workshops, seminars, etc.)?	

IDEALS	QUESTIONS	NOTES
[G-1]	**52.** On what basis is the mathematics department head selected? Are there special qualifications, experiences, or skills the math department head should have?	
[H-2]	**53.** What kinds of information do you provide to parents about your math classes and how they serve their students' needs?	
[H-3]	**54.** Who is responsible for alerting parents to the availability of special programs or tutoring assistance for their students?	
[H-4]	**55.** Who is responsible for explaining to parents about math curriculum options and their later consequences for students?	
[H-1]	**56.** What are some ways that parents and community members contribute to evaluating or improving the school's mathematics program?	

If there are other comments or suggestions you would like to contribute to this assessment of our mathematics program, please do so at this time.

Thank you for sharing your time and your thinking.



ADMINISTRATOR INTERVIEW

Thank you for your willingness to contribute to the assessment of our school's mathematics program. We will be asking questions that will provide our assessment team with information about how we fulfill the criteria for successful middle-grades mathematics programs nationwide. Your responses to these questions and your candid views will help plan our program improvements. As we talk, I will be taking notes on what you are saying, but, please be assured, your responses will remain absolutely confidential and anonymous. This interview should take about one hour.

IDEALS	QUESTIONS	NOTES
[A-3]	1. Let's begin with the school's math curriculum. To what extent are a broad array of mathematics concepts, applications, and skills taught?	
[G-3]	2. What mechanisms are available for teachers to discuss the math curriculum and to suggest potential modifications?	
[A-9]	3. How do you assure that the mathematics program responds to the findings of research in mathematics teaching and learning and to the demands of a rapidly changing technological society?	
[A-3]	4. What do you see as the goals of the mathematics program?	
[E-8]	5. How supportive is our school staff of efforts to improve and promote the mathematics program?	
[E-9]	6. How supportive of the mathematics program is the community?	

IDEALS	QUESTIONS	NOTES
[I-3]	7. Tell me how you evaluate how well our math program achieves local, state, and national goals?	
[I-5]	8. In addition to standardized achievement test data, what information do you use to evaluate the program's progress?	
[A-1]	9. It is said, in the middle grades, that memorizing and drill work should receive less emphasis in favor of more problem solving, critical thinking, and mathematical applications. How do you feel about this issue?	
[D-2]	10. Schools are urged by professional associations to monitor math grouping patterns from the standpoint of race, ethnicity, gender, handicap, or prior achievements. How do you assure that math groupings are not biased against minorities, girls, or other groups of students? What do you do to assure flexibility and the opportunity for upward mobility in the grouping of students in mathematics classes?	
[D-3]	11. How well do you think our school supports mathematically talented students, especially minority students, girls, or developing English speakers who have been traditionally underserved?	
[D-4]	12. How does our mathematics program assist struggling students?	

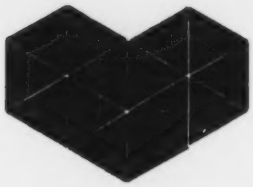
IDEALS	QUESTIONS	NOTES
[E-1]	**13.** To what extent do you expect all students to succeed in math?	
[E-7]	**14.** How do you communicate that expectation to students, parents, teachers, and the community?	
[E-4]	**15.** How are the mathematics accomplishments of students at *all* achievement levels recognized?	
	What do you think we could do to reward and encourage more students to participate in math-related activities, especially those who do not now recognize their potential in mathematics?	
[B-4]	**16.** Please describe how and by whom mathematics instructional supplies are selected in our school.	
	How do you assure that mathematics classes have sufficient and up-to-date teaching materials, equipment, and supplies?	
[G-2]	**17.** How sufficient and up-to-date, do you think, are the technology and training available to mathematics teachers?	
	What more can be done at our school to make available to mathematics teachers additional technology and the training to use it?	

IDEALS	QUESTIONS	NOTES
[B-5]	**18.** Please describe how you assure that computers, calculators and other technologies are easily accessible to all students and teachers?	
[H-2]	**19.** How are the goals and purposes of the math program communicated to parents?	
[I-2]	**20.** In what ways do you think our school helps parents monitor their children's progress in mathematics, especially those who feel their own math knowledge is too limited to offer support?	
[I-4]	**21.** How much uniformity in grading do you believe there is among the teachers in the math department? Are mathematics teachers' evaluation policies consistent with those of other departments in the school? Please explain.	
[G-6]	**22.** How do you encourage collaboration, innovation, and the exchange of ideas among math teachers?	
[G-3]	**23.** How is the mathematics in-service program developed each year?	
[G-3]	**24.** What is the mathematics faculty's role in planning and implementing its own staff development?	

IDEALS	QUESTIONS	NOTES
[G-1]	**25.** What specialized preparation and experiences does our mathematics staff have that enables them to serve the special needs of middle graders?	
[G-2]	**26.** Describe ways in which the school administration helps teachers increase their mathematics program's responsiveness to the unique developmental needs of young adolescents.	
[G-5]	**27.** Do you help promote teachers' professional involvement by providing them with release time or by paying some of the expenses associated with teachers attending professional meetings? What are some examples?	
[I-7]	**28.** How is district-level program planning and monitoring coordinated with the math program in this school?	
[I-7]	**29.** What, specifically, does our school's administrative staff do to coordinate with both elementary and high school math departments to ensure smooth transitions for students?	
[H-2]	**30.** In what ways do you assist the mathematics department in building parent and community awareness of its program?	

If there are other comments or suggestions you would like to contribute to this assessment of our mathematics program, please do so at this time.

Thank you for sharing your time and your thinking.



FACULTY INTERVIEW

Thank you for your willingness to contribute to the assessment of our school's mathematics program. We will be asking questions that will provide our assessment team with information about how we fulfill the criteria for successful middle-grades mathematics programs nationwide. Even though you may not be directly involved with the math program, your responses to these questions and your candid views help us examine the program's impact on our students. As we talk, I will be taking notes on what you are saying, but, please be assured, your responses will remain absolutely confidential and anonymous. This interview should take about 30 minutes.

(NOTE TO INTERVIEWER: This interview should be used for school staff who are not math teachers or administrators. Questions 14 through 17 should be asked only of guidance counselors, school psychologists, or other professional support personnel.)

IDEALS	QUESTIONS	NOTES
[I-6]	1. Let's begin with the curriculum. How familiar would you say you are with our mathematics curriculum?	
[G-4]	2. Have you ever been involved in any kind of cooperative planning or activities with members of the mathematics department? If so, please describe. Can you suggest cooperative efforts that you think would help our students learn to apply mathematics in your field?	
[E-1]	3. Which do you think contributes more to a student's success in mathematics: natural ability or effort? Why?	
[F-4]	4. In what ways do you and your colleagues develop students' understanding of real world applications of mathematics in your subject area?	

IDEALS	QUESTIONS	NOTES
[A-9]	**5.** Current thinking by mathematical scientists emphasizes the usefulness of mathematics beyond the mathematics classroom. In what ways has your curriculum begun to integrate mathematical ideas and concepts to reflect this emphasis?	
[F-4]	**6.** What types of math skills, if any, are students *currently* using in your subject area or area of practice? What types of math skills do you think students *could be* using in your subject area or area of practice?	
[F-2]	**7.** Mathematics is often defined as a study of patterns and relationships. This opens the way for many applications of mathematics to the arts, sciences, and other fields. What are some ways, if any, that your students explore such imaginative applications in your class?	
[A-8]	**8.** What do you do to ensure that students develop the mathematics-related skills they need in your subject area?	
[E-2]	**9.** Do you think students at all achievement levels in this school believe that they can be successful in mathematics? Why or why not?	
[E-8]	**10.** What do we do that you are aware of that encourages students to continue studying math throughout their high school years?	
[D-4]	**11.** What kinds of support are routinely available for students who need extra help in mathematics?	

IDEALS	QUESTIONS	NOTES
[D-2]	**12.** Do you think all students have enough opportunities to work up to the more advanced levels of mathematics courses?	
[D-1]	**13.** Please tell me about any specific efforts you or other staff members make to encourage girls, minorities, and other traditionally underrepresented students to excel in mathematics.	
[D-4]	**14.** Can you suggest some ways you and the staff in other content areas could help promote mathematics understanding and achievement, especially among students who have previously been unsuccessful in mathematics?	
[F-5]	**15.** How well do you think our math curriculum is preparing students to continue studying and using mathematics in high school and in their working lives?	
[F-5]	**16.** What changes do you think would bring about a closer match between course work and students' future uses of mathematics?	
[D-6]	**17.** In your opinion how does this school's faculty demonstrate its knowledge about and responsiveness to the unique physical, intellectual, and social-emotional needs of young adolescents?	
	What staff development activities have our teachers participated in that increase their understanding of responsiveness to the unique needs of middle-grades students?	

IDEALS	QUESTIONS	NOTES
[H-5]	18. How are parents involved in their children's math studies?	

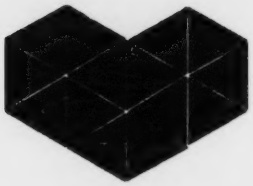
NOTE: In addition to the questions above, counselor and professional support personnel should be asked the following questions.

[H-4]	19. In what ways, if any, do you inform parents about the implications of their children's mathematics course placement and course selection on their children's future career choices in mathematics and related fields?	
[F-5]	20. In what ways do you advise students about how their course placements and course selections influence their future career choices which involve mathematics?	
[D-3]	21. Please describe how you work with teachers to identify and encourage students who have potential for high achievement in math?	
[E-8]	22. What programs and strategies have you found to be effective in working with students to help strengthen their mathematics achievements?	
[E-7]	23. How would you describe the expectations of parents in this school about their children's achievements in mathematics?	
[H-3]	24. How (in person, letter, conference, or newsletter) and when do parents get information about special support services and assistance in mathematics that may be available for their child?	

IDEALS	QUESTIONS	NOTES
[I-7]	25. Tell me about the kinds of information you receive and/or give out about students' mathematics work when they change schools mid-year, when they begin the middle grades or leave for high school?	
	How is that information communicated to classroom teachers?	

If there are other comments or suggestions you would like to contribute to this assessment of our mathematics program, please do so at this time.

Thank you for sharing your time and your thinking.



PARENT INTERVIEW

Thank you for contributing to our school's assessment of its mathematics program. We will be asking questions that will provide information about how our mathematics program meets the criteria for successful middle-grades mathematics programs nationwide. As you answer these questions, think about how the mathematics program meets the needs of your child _____. Your honest answers will help us plan improvements. As we talk, I will be taking notes on what you are saying, but, please be assured, your responses will remain absolutely confidential and anonymous. This interview should take about 30 minutes.

(NOTE TO INTERVIEWER: Ask the parent to answer these questions in terms of only *one child* in the family. Name that child at the start of the interview and use his or her name throughout.)

IDEALS	QUESTIONS	NOTES
[A-1]	1. Many groups in society now say that schools should update the math they teach to students in the middle grades. They say there should be less memorizing and drill work and more practical uses of mathematics, problem solving, and critical thinking. Do you think your child's math program reflects these changes?	
[A-9]	2. To what extent does _____'s math program reflect the new emphasis on real-life problem solving?	

	Here are some topics and teaching procedures related to middle-grades math. Please tell me if you think they are or are not included in _____'s middle-grades math classes.	Included	Not Included	Unfamiliar with Idea or Uncertain
[A-1]	3. Solving mathematical problems	____	____	____
[A-4]	4. Basic arithmetic	____	____	____
[A-5]	5. Making mathematical models and designs	____	____	____
[A-5]	6. Measuring shapes and forms	____	____	____
[A-6]	7. Using graphing, tables, and diagrams	____	____	____
[A-6]	8. Probability and statistics	____	____	____
[A-7]	9. Algebra	____	____	____
[B-5]	10. Using calculators	____	____	____
[B-5]	11. Working with computers	____	____	____
[B-7]	12. Special projects or field trips related to mathematics	____	____	____
[C-6]	13. Writing about mathematics ideas	____	____	____
[F-5]	14. Future careers in mathematics	____	____	____
[F-5]	15. Practical uses of mathematics in everyday life	____	____	____

[I-2]	16. Do you know how _____ is doing in mathematics? How do you know?	

IDEALS	QUESTIONS	NOTES
[H-2]	**17.** Is _____ doing as well as he or she needs to be doing to be prepared for the future?	
[E-9]	**18.** In what ways do you think our community—businesses, clubs, governmental agencies, etc.—demonstrates to students that it is important to learn mathematics?	
[I-7]	**19.** When _____ entered middle school, were his/her math assignments at the right level of difficulty?	
[D-2]	**20.** While your child has been at this school, have you ever wanted to have him or her moved to a higher or lower math group? If so, what happened?	
[H-4]	**21.** Has the school told you what math courses _____ must take now in order to take advanced classes in high school?	
	If you needed this or other information about _____'s mathematics course choices, whom would you ask?	
[B-6]	**22.** How often does _____ have math homework? Is this the right amount?	
[B-8]	**23.** Are the assignments hard, easy, or at _____'s level? Please explain.	
	Do you think _____'s homework is practical in that it helps improve his/her understanding of mathematics? Please explain.	

IDEALS	QUESTIONS	NOTES
[I-4]	**24.** Is the grading system fair in _____'s math class? What makes you think it is/it is not?	
[E-5]	**25.** Do you know if students get partial credit for their work in mathematics even when they make mistakes or get wrong answers? Do you think the idea of giving partial credit is a good one? Please explain.	
[H-5]	**26.** Who helps _____ with difficult math homework (i.e., you, a relative, friend, neighbor, etc.)?	
[H-3]	**27.** What is the school doing to help provide the assistance _____ needs? What more could the school do?	
[H-2]	**28.** What kinds of information does the teacher provide to you about _____'s progress in math? Do you know as much about _____'s math class as well as you would like?	
[F-1]	**29.** How well does the math program relate to _____'s interests outside of school?	

IDEALS	QUESTIONS	NOTES

[E-2] **30.** Does _____ believe he or she can be successful in mathematics?
If no, what can the school do to encourage confidence?

If yes, what gives him/her that confidence?

[E-1] **31.** Do you think _____'s teacher believes that _____ can be successful in mathematics?

Why or why not?

[G-1] **32.** Are you satisfied that the math teachers at this school know mathematics and how to teach it? If so, what gives you that confidence?

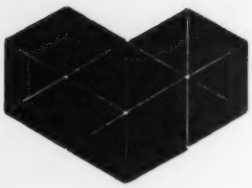
[H-1] **33.** Are parents involved in improving the math program?

How do you think the school could encourage parents to be more involved with the math program?

Have you ever volunteered to work in some way with the mathematics program?

Would you be interested in doing so, if asked?

We certainly appreciate the time you have taken to share your thoughts about the mathematics program with us. Are there any other comments or suggestions you would like to offer?



STUDENT INTERVIEW

Thank you for agreeing to answer some questions about how math is taught in school. As we talk, I will be taking notes about what you say so we can use some of your ideas to help plan improvements in the math program. However, I am not writing your name down, so your answers will remain private. This interview should take about 25 minutes.

IDEALS	QUESTIONS	NOTES
[F-1]	**1.** What do you like most about math?	
	What do you like least about math? *(Interviewer may need to suggest examples.)*	
[B-6]	**2.** Is most of what you're learning this year new or review?	
[F-5]	**3.** Do you think mathematics will be useful to you in a future job? If so, how?	
	Can you think of any examples of how you already use math outside of math class?	
[C-3]	**4.** Do your teachers ever ask you to make up problems for your classmates to solve? Tell me about what you did.	
[B-8]	**5.** Have you ever done special projects for math homework at this school? Tell me about some of them.	

IDEALS	QUESTIONS	NOTES
[F-1]	**6.** If student responds affirmatively to item 5a, ask: When you do special projects, who chooses the topics or activities you do? For example, do you ever get to do a math project or study a math problem that especially interests you?	
[B-3]	**7.** How often do you work in small groups or pairs in math class? Is this helpful to you? Why or why not? Do you ever choose your work partners or work groups?	
[D-1]	**8.** Do you think you get a fair chance to participate in class discussions and activities in math class? Does everyone in class have a fair chance?	
[F-5]	**9.** Do the problems you do in math class seem like real problems that people solve outside of school? Please explain with an example.	
[A-2]	**10.** Does your math teacher ever assign problems that are not in your textbook or workbook? Give me an example.	
[C-1]	**11.** Do you ever find more than one way to work a problem?	

I'm going to read a list of activities. Please tell me if you've ever done them in math classes at this school.		Not Done	Done
[B-1]	**12.** Gathered data by survey	___	___
[B-2]	**13.** Made math models or designs	___	___
[B-4]	**14.** Read about famous mathematicians	___	___
[B-7]	**15.** Went on a math field trip	___	___
[C-6]	**16.** Wrote a math report	___	___
[C-6]	**17.** Debated or discussed ways to solve math problems	___	___

IDEALS	QUESTIONS	NOTES
[F-3]	**18.** Do you use math in any other classes at school? For instance, do you use graphs and charts, measure, or compute information in social studies or science classes, or use geometry in art class? Give me an example.	
[F-4]	**19.** Do your other teachers ever talk about how math is useful in their subject?	
[G-4]	**20.** Do your math teachers ever talk about how math is used in your other classes?	
[B-5]	**21.** Does your teacher ever have students use calculators in math class?	
	Tell me how and when they are used.	
	Are you allowed to use calculators to do homework assignments?	
[B-5]	**22.** Do you or your teachers ever use a computer to do math?	
	Tell me how and when they are used.	
[E-2]	**23.** Do you think you're successful in math, or not? How do you know?	
[E-3]	**24.** Why do you think this is? (Is it because of how you are, what you do or don't do, luck, teachers, or family?)	

IDEALS	QUESTIONS	NOTES
[E-1]	**25.** Do you think your math teachers care about how you do in math? How do you know?	
[D-3]	**26.** How could they help you do better in math?	
[I-1]	**27.** What is your math grade based on, besides tests?	
[I-4]	**28.** Are you usually graded fairly in math class?	
[E-3]	**29.** Do your math teachers ever ask you or other students to help make the classroom rules or to set your own math goals? Tell me more about how or when this happens.	
[C-7]	**30.** Do your mathematics teachers explain things as clearly as you would like?	
[C-2]	**31.** Have any of your math teachers ever gotten stuck on a problem? What happened?	
[D-3]	**32.** If you were having trouble in math, could you talk with someone at school about it? Who?	

IDEALS	QUESTIONS	NOTES

[H-5] **33.** Is there someone at home who could help you?

Who is that?

[E-6] **34.** Do you ever try to answer a question in math class even though you're not sure your answer is right? What does your teacher usually say if you're wrong?

Do you ever get partial credit when your work on a problem is mostly right but a small mistake makes the final answer wrong?

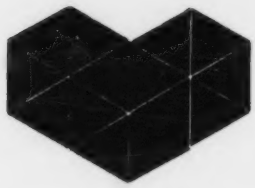
If there is anything else you would like to say about this school's math program, please tell me now.

Thank you for sharing your time and your thinking.

Section 2:
OBSERVATIONS

Mathematics Classroom Observation (MCO)

Schoolwide Observation of Mathematics-Related Activities (SWO)



CONDUCTING MATHEMATICS CLASSROOM OBSERVATIONS

1. This observation procedure focuses on recording *positive mathematics teaching practices. As a result, observers mark only "observed" items; items on the observation list that are not observed should be left unmarked.* Maintain notes of special interest and observer's comments and reflections throughout the process, but record such notes *without reference to any individual teacher.*

2. Observations of mathematics classes should be conducted by ***all*** members of the mathematics teaching faculty, including those on the assessment team and the other mathematics staff.

3. Each faculty member who teaches mathematics should be visited by a colleague from *three to six times* in a four- to six-week period. No teacher should be observed twice in one week, and observations should be scheduled so that different times of the day are observed.

4. Observations should last about 15 minutes, or as long as is necessary to record the representative activities and context associated with the observed portion of the day's lesson. If possible, visits should be staggered to obtain representative samples of the beginning, middle, and end of classes. Teachers' preferences for visitation times should be solicited and honored.

5. Try to avoid conducting observations in September, May, or June, since these are unusual periods in the school calendar and observation data will not yield a representative picture of the program.

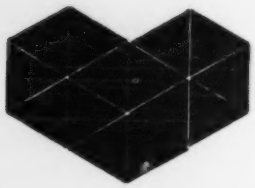
6. Each observer uses a *single* observation form for recording up to 10 observations and making comments. Blending multiple observations on one form assures teachers' anonymity and provides a more easily recorded picture of the faculty's varying approaches to mathematics teaching.

7. At the conclusion of the data-gathering period, observers should tally the number of times across *all observation forms* that each observation item was marked and record these totals on an unused copy of the observation instrument. Summarize the comments and relevant notes. Submit this summary of all observations, *not your original notes*, to a designated team member.

8. The Mathematics Classroom Observation Planning Matrix is available from the team co-leaders to facilitate observation scheduling. Feel free to modify the form or to design one that is more suitable to your program.

9. Post the observation schedule, these instructions, and a copy of the Mathematics Classroom Observation instrument in a prominent place in the school so that all participating faculty and staff are fully informed of the observation period and the process to be used.

10. Observers should provide their colleagues an opportunity to exchange ideas about the observation period by leaving with them a Post Observation Feedback Sheet, suggesting a feedback meeting time and place. This session is optional, but it is encouraged to maximize the benefits of the observation process. Details of the process are explained in the directions that accompany the feedback sheet.



MATHEMATICS CLASSROOM OBSERVATION

Record 10 observations on a single form in order to present a composite picture of the school's mathematics program. In the appropriate column mark only those items that actually are observed. Leave the item blank if it is not observed. Use the lines below to maintain a record of the date and time of your observations. Informal comments and extended discussions of your observations may be helpful in later analysis and should be recorded on the last page of this observation form or on added pages. After completing the tenth observation, detach this page in order to maintain the anonymity of those observed.

Observations should last approximately 15 minutes, or as long as necessary to fully record the representative activities and context associated with the portion of each class observed.

LOCATION	DATE	TIME	LOCATION	DATE	TIME
1.			6.		
2.			7.		
3.			8.		
4.			9.		
5.			10.		

NOTES:

Observer's Name: _____

MATHEMATICS CLASSROOM OBSERVATION

Observer _____

Instructions

To ease the recording of your observations, the checklist on the following pages has been divided into three sections. The first section includes ***physical characteristics of the classroom.*** *They should be noted while you are in the classroom. The second group of items includes* ***instructional processes*** *that should be marked as they are observed. The third group includes* ***general items*** *that need not be marked until after leaving the room. Mark each item once, regardless of how many times you observe it.*

SECTION I: Physical Characteristics of the Classroom

The following items describe characteristics of the classroom environment. They should be noted while you are in the classroom.

IDEALS	PHYSICAL CHARACTERISTICS OF THE CLASSROOM *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[D-5]	1. The seating arrangement in the classroom can best be described as:											
	a. Seating arranged in rows	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Seating arranged in semi-circles	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Seating arranged in clusters	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-5]	2. Adequate numbers of textbooks and instructional materials are available for students to do their classwork.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-4]	3. Student work is displayed on bulletin boards.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-2]	4. On display are imaginative applications of mathematics such as patterns, numerical and spatial relationships, algebraic models, graphics, etc.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-3]	5. The natural or artistic uses of mathematics (e.g., symmetry, balance, pattern in nature, graphic representations, shape and space manipulations, and constructions) are displayed in the classroom.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[A-9]	6. Student displays and/or projects demonstrate the modern use of mathematics in many nations, including third-world countries.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[I-8]	7. Instructional materials represent various racial and ethnic groups doing mathematics and/or related work.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

SECTION II: Instructional Processes

The following items describe interactions between students and teachers and among students. They should be marked as they occur, while you are observing the lesson. Regardless of how often they occur, mark them only one time per observation period.

IDEALS	INSTRUCTIONAL PROCESSES *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[B-1]	8. Most students' facial expressions and/or body postures reflect their active involvement, attentiveness, and/or interest in mathematics.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-1]	9. Students are actively engaged in doing mathematics. Mark all that apply:											
	a. Building and discussing models	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Measuring or estimating	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Working with manipulatives	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	d. Gathering and interpreting data	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	e. Making or reading graphs	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	f. Playing mathematical games	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	g. Debating	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	h. Explaining or demonstrating	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	i. Drawing diagrams	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	j. Writing about results	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	k. Using calculators	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	l. Using computers	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-4]	10. The students illustrate discussions and explanations using (mark those that apply):											
	a. Chalkboard or chartpaper	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Overhead projector	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Physical models or manipulative materials	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	d. Computer monitor	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	e. Written descriptions or journal entries	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-4]	11. Students' assignments use real-life mathematical applications or models, as well as numbers and algorithms.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-6]	12. Which of the following components of the teacher's lesson were observed? Please mark all that apply:											
	a. Review of previously introduced ideas	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Concept development	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Skill development	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	d. Routine application problems	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	e. Non-routine problem solving	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	f. Homework assignment, explanation, or review	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-7]	13. Mathematics assignments include projects and/or problems that extend beyond the immediate classroom.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	14. Teacher's talk includes questions like the following (mark those that apply):											
[C-1]	a. Are there other valid solutions to this problem? What might be a different approach or strategy?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

IDEALS	INSTRUCTIONAL PROCESSES *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[C-4]	**b.** Have we made an error here? Can you find my mistake?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-5]	**c.** What do you think? Why do you think that? How did you arrive at your answer? How can you prove to us that you are correct?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-2]	**15.** Teachers use estimation and/or hypothesis testing as tools.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-4]	**16.** Teachers help students take accurate notes, pose questions, organize materials, and in other ways improve their analytical skills.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-5]	**17.** In their discussions, students and teachers use correct mathematical language in appropriate ways.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-6]	**18.** Students give oral or written evidence of mathematical experiments, discoveries, processes, and/or strategies.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	
[C-7]	**19.** Teachers give clear, concise explanations, adjusted to meet the needs of students who are confused or have questions.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-7]	**20.** Teachers listen thoughtfully to students and provide sufficient time for students to ask and to respond to questions.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-1]	**21.** Girls and minority students are full and equal participants in class.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-2]	**22.** Student groups reflect: **a.** Racial/ethnic diversity	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Gender diversity	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-3]	**23.** Teachers accommodate students' special needs, abilities, and disabilities.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-5]	**24.** The classroom environment encourages participation by ***all*** students.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-4]	**25.** Teachers praise and reward all students, regardless of achievement levels, for their use of unique and inventive problem-solving methods.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-6]	**26.** Teachers respond to students' incorrect answers in a sensitive, constructive manner and, when appropriate, in private.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-5]	**27.** Teachers' comments link the assigned topics and students' past and future mathematics learning.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-1]	**28.** Teachers relate students' mathematical experiences to assignments in other classes and/or to students' lives outside of school.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-2]	**29.** Computational work is practiced in applied contexts, through games or by solving problems that relate to students' everyday lives.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

IDEALS	INSTRUCTIONAL PROCESSES *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[F-5]	30. Teachers refer positively to careers that use mathematics and/or they encourage *all* students, regardless of gender or ethnic group, to consider entering these fields.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[G-1]	31. Teachers are visibly enthusiastic and positive about the material they are teaching.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

Section III: General Items

The items in this section should be reviewed immediately after the classroom observation and marked if they were observed.

IDEALS	GENERAL INFORMATION *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[A-8]	32. Students demonstrate an understanding of the practical applications of mathematical terms, concepts, and/or algorithms.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-2]	33. Students use manipulatives to make the problems they are working on more concrete.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-3]	34. Students work individually on activities and/or assignments.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-3]	35. Students work cooperatively in small and/or large groups.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-5]	36. Students use computers for generating both mathematical problems and solutions (i.e., not just for drill and practice).	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-5]	37. Students use calculators for analyzing problems and finding solutions (i.e., not just for routine calculation). . .	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-3]	38. Students test out their intuitive mathematical rules or procedures.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-3]	39. Students invent problems, discover solutions, or engage in mathematical games.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-6]	40. Students discuss each others' logic and/or problem-solving methods and mathematical strategies.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-3]	41. Students help develop classroom expectations, rules, and procedures.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[G-1]	42. Teachers demonstrate understanding of the mathematical concepts they are teaching.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[H-5]	43. Parents and/or community representatives are visible partners, working with students in mathematics activities and programs.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

Notes

Please add any comments or extensions of your observations that enhance your understanding of the activity and processes observed. Indicate the date and observation number, but do not record the name of the teacher observed.

Post-Observation Feedback Sheet (Optional)

Observation of teaching among colleagues is a rewarding method of exchanging ideas and broadening teaching perspectives. To promote such an exchange, observers and observed colleagues are encouraged to discuss the observation process with one another at a convenient time soon after the observation takes place. To facilitate this exchange, observers should schedule a meeting for processing and exchanging information about the portion of the lesson observed, using these questions to guide your discussions. Leave this feedback sheet with teachers ***each*** *time you conduct an observation.*

1. How do you think the observed portion of the lesson went? Were you pleased or disappointed? Briefly explain.

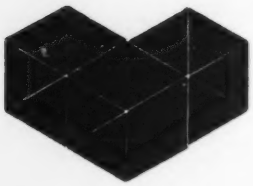
2. What were you hoping would happen during that period? If it happened that way, where will you go from here? If not, what altered the plan and what will you do next?

3. Would you describe this lesson as typical? If so, in what ways is it typical of other days' lessons? If not, in what ways was it different?

4. Is there anything in particular that I should have paid attention to while I was there?

Scheduled debriefing time/place _____

Observer_____ Class/Time/Date Observed _____



CONDUCTING SCHOOLWIDE OBSERVATIONS

1. *This observation instrument is designed to record positive teaching and learning practices in classrooms throughout the school that support the development of students' mathematical knowledge and thinking.* All classes and student work areas are observed to determine the extent to which mathematics teaching and learning are promoted schoolwide. Only positive practices are recorded; items on the observation form that are not observed should be left unmarked.

2. Each member of the Interdepartmental Faculty Cluster (IF) should accept responsibility for observing a designated proportion of instructional classes and, in addition, to observe informally in other student work areas. Other faculty members are encouraged to join the observation process after receiving directions from a team member about the observation procedures to follow.

3. Try to avoid conducting observations in September, May, or June, since these are unusual periods in the school calendar and observation data will not yield a representative picture of the program.

4. Each observer uses a single observation form for recording up to 10 observations and making comments. Blending multiple observations on one form assures teachers' anonymity and provides a more easily recorded picture of the faculty's varying approaches to mathematics teaching.

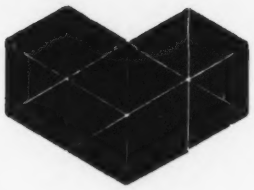
5. ***All*** spaces and programs should be observed at least once, and, if possible, several times during the assessment period. The final determination about the number of observations to conduct depends on the team's judgment about how best to obtain a fully descriptive picture of interdisciplinary mathematics teaching and learning opportunities for students.

6. Observations should last approximately 15 minutes each, or as long as it takes to obtain a composite view of the activities and participants within observed classes and work areas. If possible, visits should be staggered to obtain representative samples of the beginning, middle, and end of classes. Teachers' preferences for visitation times should be solicited and honored.

7. To facilitate scheduling of these classroom and work area visits, the Schoolwide Observation Scheduling Matrix is available from the assessment team co-leaders. The team may use this matrix for scheduling observations or it may design one that is more suitable to its program.

8. Post the observation schedule, these instructions, and a copy of the Schoolwide Observation instrument in a prominent place so that all participating faculty and staff will be fully informed of the observation period and the process to be used.

9. Observers should provide their colleagues an opportunity to exchange ideas about the observation period by leaving with them a Post Observation Feedback Sheet, suggesting a feedback meeting time and place. This session is optional, but it is encouraged to maximize the benefits of the observation process. Details of the process are explained in the directions that accompany the observation sheet.



SCHOOLWIDE OBSERVATION OF MATHEMATICS-RELATED ACTIVITIES

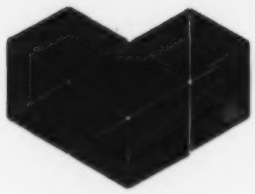
Record 10 observations on a single form in order to present a composite picture of the school's mathematics program. In the appropriate column mark only those items that actually are observed. Leave the item blank if it is not observed. Use the lines below to maintain a record of the date and time of your observations. Informal comments and extended discussions of your observations may be helpful in later analysis and should be recorded on the last page of this observation form or on added pages. After completing the tenth observation, detach this page in order to maintain the anonymity of those observed.

Observations should last approximately 15 minutes, or as long as necessary to fully record the representative activities and context associated with the portion of each class observed.

	LOCATION	DATE	TIME		LOCATION	DATE	TIME
1.				6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

NOTES:

Observer's Name: _____



SCHOOLWIDE OBSERVATION OF MATHEMATICS-RELATED ACTIVITIES

Observer _____

Instructions

To ease the recording of your observations, the checklist on the following pages has been divided into two sections. The first section includes items describing ***general instructional processes*** *and* ***characteristics of the classroom environment.*** *They should be marked as they are observed—while you are in the classroom. The second group of items includes* ***mathematics-related items*** *that you can mark towards the end of the observation or immediately after you have left the classroom. Mark each item* ***only once****, regardless of how many times you observe it.*

SECTION I: General Instructional Processes and Characteristics of the Classroom Environment

Mark these items as they are observed. Mark each item only once, regardless of how often it is observed.

IDEALS	Instructional Processes & Classroom Environment *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[B-1]	1. Students are involved in projects that require their active intellectual engagement.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-1]	2. Teachers require students to apply various problem-solving strategies in the completion of assignments. . . .	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-2]	3. Teachers use open-ended questions or demonstrate problem-solving strategies in their subject areas.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-3]	4. Students pose problems and discover solutions.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-6]	5. Teachers in various content areas encourage students to invent, write, draw, or describe their thinking and procedures.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-6]	6. Students participate in problem-solving activities that enable them to discuss one another's logic or thinking in an honest, sensitive manner.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[C-7]	7. Teachers' talk in various content areas includes comments and questions like the following (mark those that apply)											
	a. What do you think? Why do you think that? How did you arrive at your answer? How can you prove to us that you are correct?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Are there other valid solutions to this problem? What might be a different approach or strategy?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Can you find my mistake? Have we made an error here?	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

IDEALS	Instructional Processes & Classroom Environment *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[D-1]	8. Teachers involve minority students, girls, and developing English speakers as frequently as non-minority boys in discussions and decision-making situations.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-2]	9. Student groups reflect:											
	a. Racial and ethnic diversity	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Gender diversity	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-3]	10. Teachers accommodate students' special needs, abilities, and disabilities.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-5]	11. Instructional materials in various subjects represent:											
	a. All racial and ethnic groups doing technical or scientific work.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Both females and males doing technical or scientific work.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-5]	12. Teachers provide sufficient time after asking questions so that the whole class can think about problems posed.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[D-5]	13. The seating arrangement in the classroom can best be described as:											
	a. Seating arranged in rows	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Seating arranged in semi-circles	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Seating arranged in clusters	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-3]	14. Students help develop classroom expectations, rules, and procedures.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-5]	15. Students are engaged in exploring the real-world applications of course content.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

Section II: Mathematics-Related Items

Mark these items just before or immediately after leaving the classroom. Mark each item only once, regardless of how often you observe it.

IDEALS	Mathematics-Related Items *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[B-6]	16. Which of the following components of the teachers' lessons were observed? Please mark all that apply:											
	a. Review of previously introduced information	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Concept development	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Skill development	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	d. Routine application problems	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	e. Non-routine problem solving	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	f. Homework assignment, explanation, or review	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-5]	17. Teachers and students use calculators in problem-solving contexts in various subject areas.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[B-5]	18. Teachers and students use calculators in activities related to mathematics.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

IDEALS	Mathematics-Related Items *Mark If Observed*	1	2	3	4	5	6	7	8	9	10	TOTAL
[E-1]	**19.** Teachers exhibit a positive attitude toward mathematics-related activities and indicate that all students can be successful with them.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[E-4]	**20.** Students design, organize, and/or display mathematics-related work in places other than mathematics classrooms.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-1]	**21.** Teachers in various subjects demonstrate how mathematical principles apply to students' activities and interests in their class.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-3]	**22.** Natural or artistic uses of mathematics (e.g., symmetry, balance, patterns, constructions, etc.) are integrated into instruction and displayed.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-3]	**23.** Teachers of various subjects help students connect the spatial, numerical, or analytical applications of mathematics to other subjects.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[A-9]	**24.** Student displays and/or projects demonstrate the technological and scientific uses of mathematics in other nations, including third-world countries.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-4]	**25.** Teachers integrate mathematical ideas into their instructional programs as appropriate by engaging students in the following mathematics-related activities:											
	a. Classifying information	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	b. Measuring or estimating	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	c. Working with models	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	d. Debating ideas and propositions	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	e. Gathering and organizing data	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	f. Charting and interpreting data	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	g. Drawing diagrams	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	h. Writing about results	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
	i. Making or interpreting graphs	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____
[F-5]	**26.** Teachers refer positively to careers that use mathematics and/or encourage students to consider entering these fields.	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	_____

Notes

Please add any comments or extensions of your observations that enhance your understanding of the activity and processes observed. Indicate the date and observation number, but do not record the name of the teacher observed.

Post-Observation Feedback Sheet (Optional)

Observation of teaching among colleagues is a rewarding method of exchanging ideas and broadening teaching perspectives. To promote such an exchange, observers and observed colleagues are encouraged to discuss the observation process with one another at a convenient time soon after the observation takes place. To facilitate this exchange, observers should schedule a meeting for processing and exchanging information about the portion of the lesson observed, using these questions to guide your discussion. Leave this feedback sheet with teachers ***each*** *time you conduct an observation.*

1. How do you think the observed portion of the lesson went? Were you pleased or disappointed? Briefly explain.

2. What were you hoping would happen during that period? If it happened that way, where will you go from here? If not, what altered the plan and what will you do next?

3. Would you describe this lesson as typical? If so, in what ways is it typical of other days' lessons? If not, in what ways was it different?

4. Is there anything in particular that I should have paid attention to while I was there?

Scheduled debriefing time/place _____

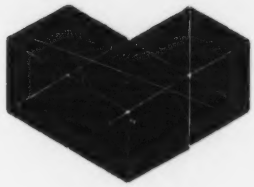
Observer_____ Class/Time/Date Observed _____

Section 3:
SURVEYS

Mathematics Teacher Survey (MTS)

Mathematics Materials and Facilities Survey (MFS)

Statistical Profile (SP)



MATHEMATICS TEACHER SURVEY

The MAP team would like you to complete this survey in order to provide our school with background information that will guide our assessment process. This information is confidential and anonymous. No signature is requested. Your openness and candor in completing the survey will strengthen our department's program planning.

Please return this form by _____ to _____, who is coordinating the data collection for this component of the assessment.

I. Professional Background and Staff Development

1. a. What certification, endorsement, or special training do you have in teaching mathematics in the middle grades?

   b. How many courses in mathematics or mathematics teaching did you have in your undergraduate preparation program?

2. List postgraduate courses, workshops, or other training in mathematics or mathematics teaching that you have taken in the last five years.

3. List postgraduate courses, workshops, or training in evaluation, assessment, and testing that you have taken in the last five years.

4. List local, state, or national professional memberships you presently hold (e.g., American Federation of Teachers, National Education Association, National Council of Teachers of Mathematics, School Science and Mathematics Association, National Middle School Association, etc.):

5. What additional training or experience should our school sponsor to enhance your continuing development as a middle-grades mathematics teacher?

ADDITIONAL COMMENTS:

II. Instructional Approaches

How often do you use each of the following techniques in teaching mathematics to your classes? Check the box that best describes your use of each technique:

			Daily	Weekly	Monthly	Rarely	Never
[B-2]	1.	Students using manipulatives	❑	❑	❑	❑	❑
[B-3]	2.	Students working in groups or teams	❑	❑	❑	❑	❑
[B-3]	3.	Group projects	❑	❑	❑	❑	❑
[B-4]	4.	Demonstrating/modeling	❑	❑	❑	❑	❑
[B-4]	5.	Library work/research	❑	❑	❑	❑	❑
[B-4]	6.	Workbooks	❑	❑	❑	❑	❑
[B-5]	7.	Calculator problem solving	❑	❑	❑	❑	❑
[B-5]	8.	Computer drill and practice	❑	❑	❑	❑	❑
[B-5]	9.	Computer problem solving	❑	❑	❑	❑	❑
[B-5]	10.	Televised instruction	❑	❑	❑	❑	❑
[B-6]	11.	Review of skills, concepts, and procedures	❑	❑	❑	❑	❑
[B-7]	12.	Individual projects	❑	❑	❑	❑	❑
[B-7]	13.	Math-related field trips	❑	❑	❑	❑	❑
[C-3]	14.	Students generating and/or solving real-life problems	❑	❑	❑	❑	❑
[C-5]	15.	Questioning students	❑	❑	❑	❑	❑
[C-5]	16.	Whole-class discussion	❑	❑	❑	❑	❑
[C-6]	17.	Journals and mathematical writing	❑	❑	❑	❑	❑
[C-6]	18.	Student-led discussion	❑	❑	❑	❑	❑
[C-7]	19.	Lecture/exposition	❑	❑	❑	❑	❑
[D-3]	20.	Individualized assignments	❑	❑	❑	❑	❑
[H-5]	21.	Guest speakers	❑	❑	❑	❑	❑
[I-1]	22.	Teacher-made tests and/or quizzes	❑	❑	❑	❑	❑
[I-1]	23.	Text-based assignments or tests	❑	❑	❑	❑	❑
[A-1]	24.	Concepts taught using routine and non-routne problems	❑	❑	❑	❑	❑
[B-8]	25.	Homework extends learning and applies new skills	❑	❑	❑	❑	❑

COMMENTS:

III. Evaluation Procedures

Check any of the following diagnostic procedures you use to evaluate students' mathematics skills and their development throughout the year. This list surveys the range and frequency of many evaluation options; not all of these procedures are appropriate in every context. (Criteria and Ideal: I-1)

	Beginning of Year	Routinely	Each Unit or Quarterly	End of Year	Not Used
1. Informal diagnostic observation	❑	❑	❑	❑	❑
2. Listening to students think aloud as they solve problems.	❑	❑	❑	❑	❑
3. Journals of mathematical reflections	❑	❑	❑	❑	❑
4. Students' written descriptions of mathematical problem-solving processes	❑	❑	❑	❑	❑
5. Homework	❑	❑	❑	❑	❑
6. Quizzes	❑	❑	❑	❑	❑
7. Individual projects and presentations	❑	❑	❑	❑	❑
8. Group projects and presentations	❑	❑	❑	❑	❑
9. Student-generated computer programs	❑	❑	❑	❑	❑
10. Student-generated mathematics problems to solve	❑	❑	❑	❑	❑
11. Conferences with:					
Students	❑	❑	❑	❑	❑
Parents	❑	❑	❑	❑	❑
Other teachers	❑	❑	❑	❑	❑
12. Tests					
Teacher-made tests	❑	❑	❑	❑	❑
Department-created tests	❑	❑	❑	❑	❑
District-created tests (not standardized)	❑	❑	❑	❑	❑
Textbook tests and inventories	❑	❑	❑	❑	❑
Standardized normed achievement tests	❑	❑	❑	❑	❑
Standardized criterion-referenced tests	❑	❑	❑	❑	❑
Standardized individual or group diagnostic tests	❑	❑	❑	❑	❑

13. Please also describe any other assessment techniques you use, indicating when and how you use them.

14. Of all the tests you administer, indicate those for which results are sent routinely to students and parents or which are discussed individually at conferences.

15. List below those evaluation procedures that are used specifically to address:
    a. school goals

    b. district goals

    c. state or national goals.

ADDITIONAL COMMENTS:

IV. Special Programs in Mathematics

In the space below, list special in-school or after-school mathematics programs for students such as remedial assistance, mathematics clubs, academic competitions, etc. (Include programs in which parents or community volunteers assist or sponsor mathematics activities.)

1. Program name: _____ # of participants _____
   Brief description and target group:

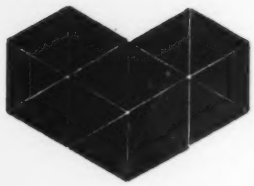
2. Program name: _____ # of participants _____
   Brief description and target group:

3. Program name: _____ # of participants _____
   Brief description and target group:

4. Program name: _____ # of participants _____
   Brief description and target group:

Are any ethnic or gender groups underrepresented in these activities?

What is done to avoid underrepresentation of minorities, females, or developing English speakers in these programs?



MATHEMATICS MATERIALS AND FACILITIES SURVEY

Please use this survey to record whether or not items are present in the school, regardless of where they are located. An assessment of the frequency of use can be obtained by conducting multiple observations or by eliciting the opinions of members of the mathematics faculty.

	Used Regularly	Available but Rarely Used	Not Available

I. Teacher Resources

A work room or area is designated for meeting, planning, and preparing materials.	_____	_____	_____
The following supplies are accessible to teachers:			
1. Ditto machine	_____	_____	_____
2. Photocopier machine	_____	_____	_____
3. Thermofax machine	_____	_____	_____
4. Laminating machine	_____	_____	_____
5. Art supplies	_____	_____	_____
6. Telephone	_____	_____	_____
7. Computers	_____	_____	_____
8. Computer printers	_____	_____	_____
9. Computer software (list a representative sample)			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Curriculum guides/resources:			
10. Local-level curriculum guides	_____	_____	_____
11. State-level curriculum guides	_____	_____	_____
12. Teachers' editions of textbooks	_____	_____	_____
Supplementary instructional resources on the following topics:			
13. Computer applications of mathematics	_____	_____	_____
14. Developing critical thinking	_____	_____	_____
15. Problem solving	_____	_____	_____

	Used Regularly	Available but Rarely Used	Not Available
16. Using calculators	_____	_____	_____
17. Using manipulatives	_____	_____	_____
18. Working with graphs and charts	_____	_____	_____
19. List the major professional journals and mathematics-related publications subscribed to by the school:			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

II. Student Resources for Mathematics

A work area or laboratory is designated for students to receive additional help on math skills.	_____	_____	_____

The following resources are available for students to use in mathematics:

1. Art supplies	_____	_____	_____
2. Arithmetic calculators	_____	_____	_____
3. Scientific calculators	_____	_____	_____
4. Graphics calculators	_____	_____	_____
5. Computers for student use	_____	_____	_____
6. Drill and practice software	_____	_____	_____
7. Mathematical games	_____	_____	_____
8. Geometric models	_____	_____	_____
9. Manipulative materials	_____	_____	_____
10. Supplementary workbooks and resources	_____	_____	_____
11. Thinking and problem-solving software	_____	_____	_____

III. Media Center/Library

Which of the following materials or resources are available in a media center, library, or other accessible work area for students and teachers:

1. Audiotape player	_____	_____	_____
2. Filmstrip projector	_____	_____	_____
3. 16mm film projector	_____	_____	_____
4. Overhead projectors	_____	_____	_____
5. Overhead calculators	_____	_____	_____

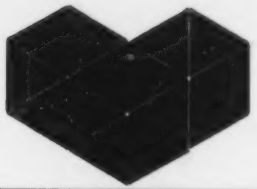
	Used Regularly	Available but Rarely Used	Not Available
6. Overhead computers	_____	_____	_____
7. Videotape monitor and VCR	_____	_____	_____
8. Television(s)	_____	_____	_____
9. Other: _____	_____	_____	_____
Mathematics references in the library or classrooms:			
1. Books about careers using mathematics	_____	_____	_____
2. Mathematics-related magazines	_____	_____	_____
3. Newsletters that include mathematical problem-solving challenges/solutions	_____	_____	_____
4. Information emphasizing minority involvement in mathematical sciences	_____	_____	_____
5. Information about mathematical work in other nations, including third-world countries	_____	_____	_____
Displays:			
1. Mathematical models and designs	_____	_____	_____
2. Students' mathematics projects	_____	_____	_____
3. Displays emphasizing minority involvement in mathematical sciences	_____	_____	_____
Space and physical arrangements:			
1. Large group instruction area	_____	_____	_____
2. Small group research/meeting areas	_____	_____	_____
3. Flexible seating arrangements	_____	_____	_____
4. Mathematics-focused reference area for students	_____	_____	_____

IV. Mathematics Manipulatives

1. Algebra-related manipulatives	_____	_____	_____
2. Attribute blocks	_____	_____	_____
3. Base-ten blocks	_____	_____	_____
4. Chart paper	_____	_____	_____
5. Chip trading sets	_____	_____	_____
6. Compasses	_____	_____	_____
7. Cubes	_____	_____	_____
8. Cuisenaire apparatus	_____	_____	_____
9. Dice	_____	_____	_____
10. Dot paper	_____	_____	_____
11. Fraction bars	_____	_____	_____
12. Geoboards	_____	_____	_____

	Used Regularly	Available but Rarely Used	Not Available
13. Geometry construction materials	_____	_____	_____
14. Metric measuring devices	_____	_____	_____
15. Pattern blocks	_____	_____	_____
16. Protractors	_____	_____	_____
17. Rulers	_____	_____	_____
18. Scales	_____	_____	_____
19. Scientific measuring instruments	_____	_____	_____
20. Scissors	_____	_____	_____
21. Spinners	_____	_____	_____
22. Tessellation drawing paper	_____	_____	_____
23. 3-dimensional models	_____	_____	_____
24. Tiles	_____	_____	_____
25. Other (list)			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Other materials and/or comments:



STATISTICAL PROFILE

NOTE: The forms in this section are useful for generating a statistical profile that can help clarify how various segments of the student population currently are being served by your school's mathematics program. Use these forms or revise them to suit your school's needs.

I. MATHEMATICS COURSE ENROLLMENT *(by course level, grade, and special population)* TEACHER: _____

Complete a separate enrollment profile for each grade. For each, indicate the number and percentage of students, by gender, within each of the groups listed below.

MATHEMATICS COURSE LEVEL AND GRADE	AFRICAN AMERICAN		ASIAN		LATINO		NATIVE AMERICAN		OTHER MINTORITY		CAUCASIAN		DEVELOPING ENGLISH-SPEAKING STUDENTS (LEP, ESL,etc.)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Regular Mathematics Grade_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____
Advanced or Honors Mathematics Grade_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____
Algebra Grade_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____
Remedial Mathematics Grade_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____
Special Education Mathematics Grade_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____	#_____ %_____

II. GRADE-LEVEL MATHEMATICS ACHIEVEMENT TEST DATA *(by sub-test and grade)* TEACHER: _____

NOTE: **If more than one standardized test is administered, report the data for the most commonly used test. If local test data are not available in this format, modify this form as necesary.**

Name of standardized mathematics test used: _____

Form: _____ **Year Published:** _____ **Date Administered:** _____

Check the appropriate box to indicate the type of test score reported:

A.
- ❑ Percentiles
- ❑ Normal Curve Equivalent (NCE)
- ❑ Standard Score

B.
- ❑ Mean
- ❑ Median

Percentile or Average Scores *(by subtest and grade)*

List Each Mathematics Subtest (e.g., Skills, Problem Solving, Concepts)	Grade: _____	Grade: _____	Grade: _____	Grade: _____

Percentage of Students Scoring at or Above 40th Percentile *(by subtest and grade)*

List Each Mathematics Subtest	Grade: _____	Grade: _____	Grade: _____	Grade: _____

Percentage of Students Scoring at or Below 25th Percentile *(by subtest and grade)*

List Each Mathematics Subtest	Grade: _____	Grade: _____	Grade: _____	Grade: _____

III. SCHOOLWIDE ACHIEVEMENT DATA *(by grade and racial/ethnic group)*

TEACHER: _____

NOTE: These data can be helpful in identifying achievement disparities among racial and ethnic groups in your school. Such gaps can be addressed by appropriate program adjustments. To complete this form, the department may need to consult with school-level adminstrators or the testing personnel in the district office for assistance. Modify headings to suit the needs of your student population and school.

Name of standardized mathematics test used: _____

Form: _____ **Year Published:** _____ **Date Administered:** _____

Check the appropriate box to indicate the type of test score reported:

A. ❑ Percentiles
❑ Normal Curve Equivalent (NCE)
❑ Standard Score

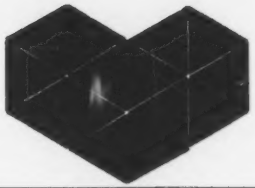
B. ❑ Mean
❑ Median

GRADE LEVEL	ALL STUDENTS		AFRICAN AMERICAN		ASIAN		HISPANIC		NATIVE AMERICAN		OTHER MINORITY		CAUCASIAN	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____
	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____
	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____
	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____
	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____	# _____ % _____

Section 4:
DATA ANALYSIS GUIDES

Criteria and Ideals: Cross-Reference List

Criteria and Ideals: Cross-Reference Worksheet



CRITERIA AND IDEALS: CROSS-REFERENCE LIST

A. CONTENT	MTI	ADM	FI	PARI	STI	MCO	SWO
A1. The curriculum provides a problem-based context for learning.	6 see MTS	9		1, 3			
A2. Mathematics problems occur in varied formats.	8 see MTS				10		
A3. The curriculum content is balanced and comprehensive.	38 see MTS, MFS	1, 4					
A4. The curriculum develops number and operation sense.	1 see MTS			4			
A5. The curriculum develops spatial and measurement sense.	2 see MTS			5, 6			
A6. The curriculum includes probability and statistics.	3 see MTS			7, 8			
A7. The curriculum introduces algebraic notions of variables, equations, and functions.	4 see MTS			9			
A8. The curriculum emphasizes understanding of concepts and procedures.	5 see MTS		8			32	
A9. The curriculum is research-based and responds to a changing society.	see MTS, MFS	3	5	2		6	24

B. INSTRUCTION	MTI	ADM	FI	PARI	STI	MCO	SWO
B1. Students actively engage in mathematics.	26				12	8, 9	1
B2. Students discover meaning through manipulations with concrete materials.	7 see MTS, MFS				13	33	
B3. Students learn individually and in groups.	28				7	34, 35	
B4. Students construct meaning using a variety of resources and instructional materials.		16			14	10, 11	
B5. Instruction makes appropriate and regular use of technology.	23, 24 see MFS	18		10, 11	21, 22	36, 37	17, 18
B6. Instruction balances new learning and review; classwork and homework.				22	2	12	16
B7. Supplementary programs and enrichment activities extend mathematics instruction beyond the classroom.	29 see MTS			12	15	13	
B8. Homework extends mathematics learning and applies new study skills.	37 see MTS			23	5		

C. THINKING PROCESSES	MTI	ADM	FI	PARI	STI	MCO	SWO
C1. Thinking processes reflect multiple strategies for problem solving.	9				11	14a	2
C2. Teachers model problem solving.	10				31	15	3
C3. Students pose problems and discover solutions.	17				4	38, 39	4
C4. The curriculum develops analytical reasoning abilities.	11 see MTS					14b, 16	
C5. Students and teachers discuss mathematical ideas.	33					14c, 17	
C6. Students write and talk with one another about mathematics.	16 see MTS			13	16, 17	18, 40	5, 6
C7. Teachers clarify underlying concepts and listen to students' ideas.	see MTS				30	19, 20	7

D. DEVELOPMENTAL DIVERSITY	MTI	ADM	FI	PARI	STI	MCO	SWO
D1. All students, especially minorities, girls, and developing English speakers, have equal access to information, assistance, and classroom interaction.	30		13		8	21	8
D2. Teachers use fair and flexible grouping practices.	32	10	12	20		22	9
D3. Teachers accommodate special needs, abilities, and disabilities.	13	11	21		26, 32	23	10
D4. Teaching strategies motivate underachievers.	12 see MTS	12	11, 14				
D5. The classroom environment invites participation by all students.						1, 2, 24	11, 12, 13
D6. Staff development and planning focus on the unique developmental needs of young adolescents.	48		17				

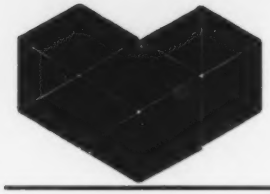
E. ATTITUDES	MTI	ADM	FI	PARI	STI	MCO	SWO
E1. Teachers believe all students are competent in mathematics.	31	13	3	31	25		19
E2. Students believe they can be successful in mathematics.			9	30	23		
E3. Students help develop high expectations and standards for themselves and others.	27				24, 29	41	14
E4. The school recognizes and rewards the mathematics achievements of all students.	34	15				3, 25	20
E5. Originality and accuracy in mathematics are both rewarded.	18			25			
E6. Students are free to make mistakes and are encouraged to take risks.	19				34	26	
E7. The school encourages families to expect and support mathematics achievement.	39	14	23				
E8. School support personnel assist in promoting the mathematics program.		5	10, 22				
E9. The community values mathematics achievement.		6		18			

F. RELEVANCE	MTI	ADM	FI	PARI	STI	MCO	SWO
F1. Teachers relate mathematics to individual interests.	14			29	1, 6	28	21
F2. Imaginative uses of mathematics are stimulated.	see MFS		7			4, 29	
F3. Mathematics is applied to the arts and sciences.	15				18	5	22, 23
F4. The usefulness of mathematics is taught across subjects.	44		4, 6		19, 20		24, 25
F5. The program stresses the importance of mathematics in everyday life and in future career choices.	22		15, 16, 20	14, 15	3, 9	27, 30	15, 26

G. COLLEGIALITY	MTI	ADM	FI	PARI	STI	MCO	SWO
G1. The mathematics program has strong leadership and an effective, knowledgeable, and caring staff.	47, 52	25		32		31, 42	
G2. The school and district support teachers' continuing education in mathematics.	51	17, 26					
G3. The mathematics department conducts regular program reviews and plans in-service activities.	45, 49	2, 23, 24					
G4. Interdisciplinary collaboration strengthens mathematics teaching.	42		2				
G5. Administrators encourage professional involvement.	50	27					
G6. Schedules enable collaborative planning.	43	22					

H. COMMUNITY	MTI	ADM	FI	PARI	STI	MCO	SWO
H1. Parents and community are involved in improving the mathematics program.	53, 56 see MTS			33			
H2. Parents are informed about the development and purposes of the mathematics program.		19, 30		28			
H3. Parents are informed of specialized support and instructional assistance in mathematics.	54		24	27			
H4. Parents are informed of mathematics curriculum options and their consequences.	55		19	17, 21			
H5. Parents and community participate in mathematics activities in and outside of school.	21 see MTS		18	26	33	43	

I. CONTINUING ASSESSMENT	MTI	ADM	FI	PARI	STI	MCO	SWO
I1. Individual student achievement is evaluated using multiple sources of data.	35 see MTS and Statistical Profile				27		
I2. Students and parents receive constructive feedback.	40 see MTS	20		16			
I3. Assessment sources address school, district, state, and national goals.	see MTS and Statistical Profile	7					
I4. Grading policies are clearly defined and consistently administered.	36	21		24	28		
I5. The mathematics program is evaluated using multiple sources of data.	41 see MTS	8					
I6. Teachers in all subject areas participate fully in program planning and evaluation.	46		1				
I7. The middle-grades mathematics program coordinates with the mathematics programs in local elementary and high schools.	25	28, 29	25	19		7	
I8. The mathematics department monitors curriculum materials for bias.	20						



CRITERIA AND IDEALS: CROSS-REFERENCE WORKSHEET

These worksheets may be helpful in keeping summary records of data you collect. Use them in any way you wish.

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END

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Research and Improvement (OERI)

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